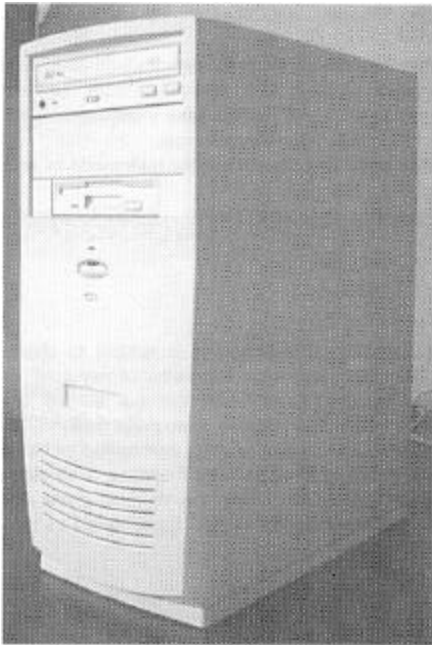


Personal Computer User's Guide



<http://www.pdf-tools.com>

Copyright Notice

Copyright ©1999 AST Computers, LLC. All Rights Reserved. No part of this documentation, including but not limited to the products and software described in it, may be reproduced, transmitted, transcribed, stored in a retrieval system, or translated into any language, in any form or by any means without the express written permission of AST Computers, LLC.

Trademarks

Products and corporate names appearing in this manual may be registered trademarks or copyrights of their respective companies and are used only for identification and explanation purposes without intent to infringe.

Intel, MMX, Celeron and Pentium are registered trademarks of Intel Corporation.

IBM and OS/2 are registered trademarks of International Business Machines.

Award is a registered trademark of AWARD Software International, Inc.

SiS is a registered trademark of Silicon Integrated System Corp.

ESS is a registered trademark of ESS Technology, Inc.

MS-DOS, Microsoft, Windows and Windows 98 are registered trademarks of Microsoft Corporation.

VESA is a registered trademark of Video Electronics Standards Association.

Images used on pages 16, 17, 18 & 23 were obtained from The Learning Company's Business Graphics product, ©1998 The Learning Company and its subsidiaries, 881 Way, Novato CA. 94945 USA. All rights reserved.

Other product names used in this manual may be trademarks or registered trademarks of their respective owners.

AST and the AST logo are registered trademarks of AST Computers, LLC.

Disclaimer

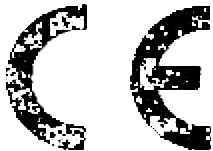
The information contained in this documentation is subject to change without notice.

AST Computers, LLC makes no representations or warranties of any kind, either express or implied, with respect to the contents hereof, including but not limited to implied warranties of merchantability or fitness for a particular purpose. In no event shall AST Computers, LLC be liable for any loss of profits, loss of business, loss of data, interruption of business, or indirect, special, incidental, or consequential damages of any kind arising from the use of this product or documentation. AST Computers, LLC reserves the right to revise or change this product or documentation at any time without obligation of AST Computers, LLC to notify any person of such revision or changes.

SRMCTWR 7199

Certification Notices

CE Declaration



This product was manufactured in compliance with all provisions of the 1994 CE Regulations.

FCC Compliance



This product complies with Part 15 of the Federal Communication Commission Rules, and has been tested and verified to comply with EMI requirements. Only FCC Class B certified peripheral devices may be connected to this equipment. Operation with non-certified peripheral devices is likely to cause interference to radio/television reception.

These requirements are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy, and if not installed and used in accordance with the instructions, may cause harmful interference to radio/television communications. However, there is no guarantee that interference will not occur in a particular installation. This equipment causes harmful interference to radio or television reception (which can be determined by turning the equipment on and off), follow these suggestions to correct the interference:

- Adjust or relocate the receiving antenna.

- Increase the distance between the equipment and receiver.

- Connect the equipment to an electrical circuit different than the receiver's.

- Consult an authorized radio/TV technician for assistance.

Year 2000 Compliance



This product has been tested and qualified for NSTL Year 2000 Compliance.

Safety Notices

For your own safety, and to avoid accidental damage to your equipment, observe these precautions:

- Before connecting or disconnecting system components, read all instructions. Make sure you understand how to perform these procedures, to avoid risk of accidental damage to your equipment.
- Do not connect the system's power cord to an electrical outlet until you have properly connected all of your system's peripheral devices.
- Save these instructions for future use.
- Follow all warnings and instructions marked on the products.
- Set up your system on a desk, tabletop or other stable surface. The system should be located in a cool, clean area away from excess moisture, water, heat, direct sunlight and dust.
- Do not place the system near a radiator or heat outlet, or in an enclosure unless it is properly ventilated.
- The system case features several ventilation openings to protect the system from overheating. To avoid risk of damage due to overheating, do not block or cover the vents or place the system close to the wall.
- Do not turn the computer's power switch on when the cover has been removed from the case.
- Your AST computer may be equipped with a power cord rated for use with either a 120V power supply (U.S.A.) or a 240V power supply (United Kingdom), depending on the product you purchased.
- Important Information About Your CMOS RAM Battery - Replace your system's CMOS RAM battery only with the identical CR2 3V Lithium Ion coin cell (or equivalent) battery type, to avoid risk of personal injury or physical damage to your equipment. Always dispose of used batteries according to the manufacturer's instructions, or as required by local ordinance (where applicable).

CONTENTS

TITLE PAGE	1
COPYRIGHT NOTICE	2
CERTIFICATION NOTICES.....	3
SAFETY NOTICES.....	4
 1 SETTING UP YOUR AST COMPUTER.....	7
UNPACK YOUR COMPUTER	7
CHOOSE A LOCATION	8
CONNECT YOUR SYSTEM'S COMPONENTS	8
TURN ON YOUR AST SYSTEM	13
FRONT PANEL CONTROLS	13
TROUBLESHOOTING.....	16
IF YOUR PRODUCT NEEDS SERVICE	17
TAKE A BREAK (USING THE SLEEP FEATURE)	17
SHUTTING DOWN YOUR SYSTEM (POWER OFF)	18
 2 SYSTEM FEATURES	19
MOTHERBOARD	19
 3 BIOS SETUP	21
HOW TO ENTER THE BIOS SETUP PROGRAM	21
SETUP KEYS	22
IN CASE OF PROBLEMS	22
SETUP MENU BAR	23
MAINTENANCE MENU	24
MAIN MENU	25
ADVANCED MENU	26
BOOT SETTING CONFIGURATION SUBMENU	28
PERIPHERAL CONFIGURATION SUBMENU	29
IDE CONTROLLER SUBMENU	32
IDE DEVICE CONFIGURATION SUBMENUS	34
DISKETTE CONFIGURATION SUBMENU	36
EVENT LOG CONFIGURATION SUBMENU	37
VIDEO CONFIGURATION SUBMENU	38
RESOURCE CONFIGURATION SUBMENU	39
SECURITY MENU	40
POWER MENU	42
BOOT MENU	43
EXIT MENU	46

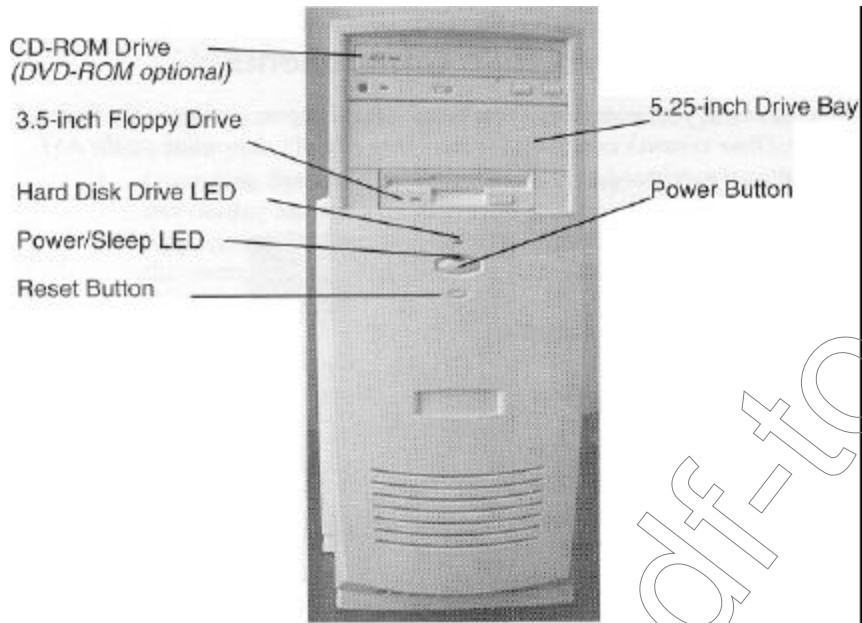
4 COMPONENTS AND UPGRADES.....	47
OPEN THE SYSTEM CASE.....	47
ACCESSING YOUR SYSTEM'S MOTHERBOARD.....	53
HOW TO RESTORE THE SYSTEM CASE.....	65
MOTHERBOARD (MAIN CIRCUIT BOARD) LAYOUT.....	57
MOTHERBOARD CONNECTORS & JUMPERS.....	58
JUMPER SETTINGS	60
INSTALLING DEVICES	61
CPU UPGRADE PROCESSOR	61
SYSTEM MEMORY (DRAM) UPGRADE.....	73
EXPANSION SLOTS	75
INSTALLING PERIPHERAL DEVICES.....	67
5 OPERATING SYSTEM & SOFTWARE RECOVERY.....	69
RESTORING MICROSOFT WINDOWS 98.....	69
RESTORING DEVICE DRIVERS	70
INSTALLING OTHER SOFTWARE	72
6 ERROR MESSAGES.....	73
BIOS ERROR MESSAGES	73
BIOS BEEP CODES	76

1. Setting Up Your AST Computer

Unpack Your Computer

Carefully unpack your computer system components (computer keyboard, mouse, etc.) and set them aside. Save the carton and packing materials for future use.

Your computer's front panel should appear similar to the figure below. (Your system's configuration may vary, depending on the AST product you purchased.)



Choose a Location

- Set up your computer on a desk, tabletop or other stable surface, preferably near an available telephone wall jack. For best results, it should be located in a cool, clean area away from excess moisture, water, heat, direct sunlight and dust.
- Don't place the computer near a radiator or heat outlet, or within an enclosure unless it is properly vented.
- The computer's case features several vents to help protect the system from overheating. To minimize risk of damage due to overheating, don't block or cover the vents or place the computer close to the wall.
- See the following section for information on connecting system components and peripheral devices to your computer.

Connect Your System's Components

In most cases, your computer's rear panel should appear similar to the figure below. (Your system's configuration may vary slightly, depending on the AST product you purchased.)

Rear Panel Connectors

Keyboard/Mouse Ports
USB Ports

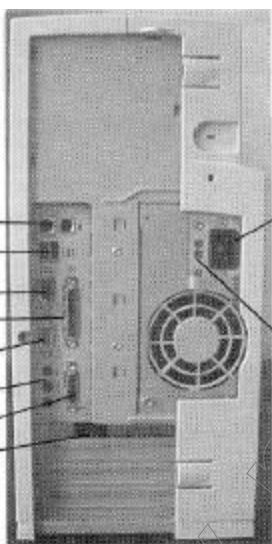
Serial Port
Parallel Port

VGA (Video) Port
Audio Line In/Out/Mic

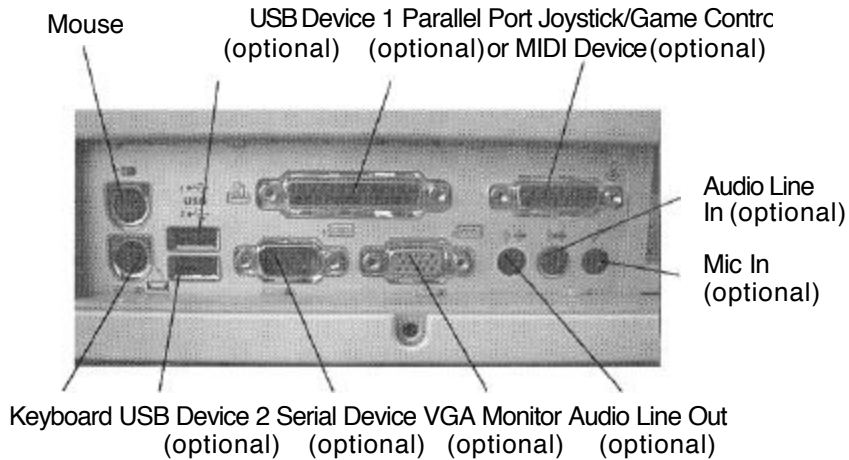
Game/MIDI Port
Modem (Phone Line/
Handset)

AC Power Cord
Connector

Voltage Selector
Switch



To set up your computer, gently place the computer on its side so that you can see the rear panel connectors, as shown below.



Now, carefully connect your system's components, as discussed before. Be sure you insert a connector into its port, make sure that the connector is oriented toward the port so that they match exactly. Don't try to force a connection - you could accidentally damage your equipment!

NOTE If a connector doesn't fit squarely into a port, check the connector for bent pins. If necessary, carefully straighten a bent pin with a pair of needle nose pliers, then try connecting it again.

- **Keyboard & Mouse**
Carefully plug your computer's Keyboard and Mouse cable connectors into the Keyboard port and Mouse port on the rear panel.
- **USB1 & USB2 Ports**
Your computer's USB ports let you easily connect optional USB devices, such as a USB scanner, to your system.

- Serial Port

You can connect an optional serial device to the serial port on the rear panel, such as a serial mouse, modem or tablet.

- Monitor (optional)

Place your VGA video monitor and monitor signal cable near your computer, where you can see it comfortably.

- 1) Carefully connect your monitor's 15-pin signal cable connector to the VGA Video Monitor port on the computer's rear panel. Tighten the two screws on both sides of the cable connector to secure the connection.
- 2) If necessary, repeat the procedure to secure the other end of the signal cable to your monitor's rear panel connector.
- 3) Connect your monitor's power cord to a surge protector and a grounded AC electrical outlet.

- Parallel Port

Connect an optional parallel port-compatible peripheral device here, such as a parallel printer or scanner. Remember to connect the device's power cord to your surge protector or grounded AC electrical outlet, if necessary.

- Game/MIDI Port

You can connect an optional MIDI (Musical Instrument Digital Interface) device, joystick or game controller to the Game/MIDI port.

- Audio Line Out

You can connect an optional audio output device to the Audio Line Out connector, such as an external speaker system.

- Audio Line In

You can connect an optional audio input device to the Audio Line In connector, such as a portable stereo "boom box."

- Microphone In

You can plug an optional microphone into the Mic In connector. The microphone can be used for optional features, such as voice software applications.

- **Modem**

Your computer's modem should be installed in an adapter card slot on the rear panel (near the Game/MIDI Port). The modem's phone jacks should be labeled LINE/WALL and PHONE. To connect your modem to your phone line:

- 1) Unplug your telephone from the telephone wall jack ~~you're~~ using. Then connect a telephone extension cord from the wall jack to your modem's LINE or WALL jack. (Keep the cord away from foot traffic areas.)
- 2) If desired, connect your telephone to the modem's PHONE jack, for phone accessibility while working ~~with~~ the computer.

NOTE If your computer features a single ~~jack~~ modem, you can get the same result by plugging a line splitter (modular duplex jack) into your telephone wall socket. Connect a telephone extension cord from one of the splitter's jacks to your modem's phone jack. Then plug your telephone into the splitter's remaining jack.

- **Other Components**

To connect an additional device, check the device's documentation for specific instructions. See the illustration on the ~~page~~ for connector locations.

- **Voltage Selector Switch (if included)**

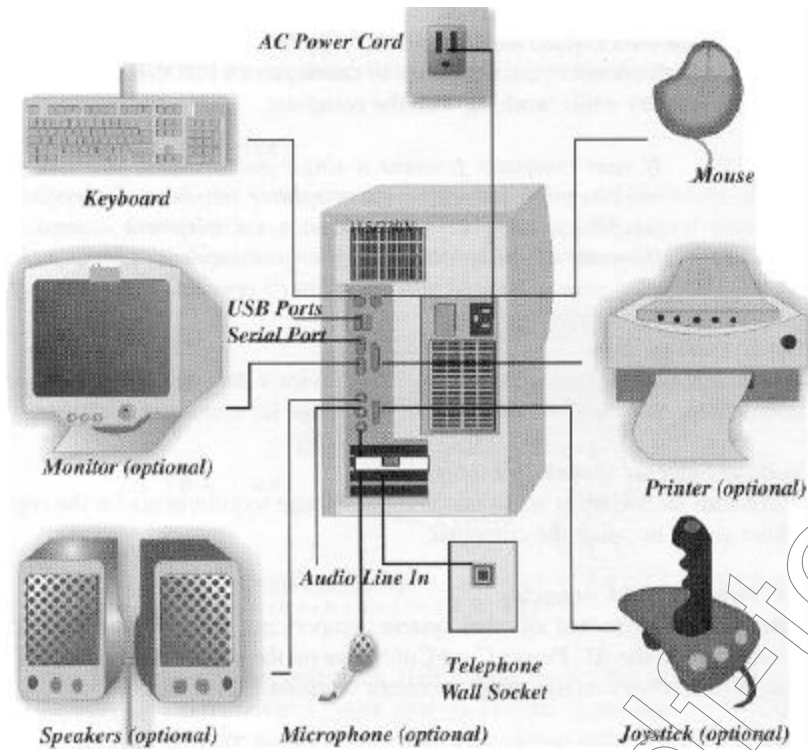
Make sure the switch is set to match local voltage requirements for the region where you'll be using the computer.

- **AC Power Cord Connector**

After you've connected all other system components, connect your computer's power cord to the AC Power Cord Connector on the system's rear panel. Then connect the other end to a surge protector or grounded AC outlet.

Typical System Connections

The following illustration shows where to connect your system's components.
(Your components may appear different than illustrated.)



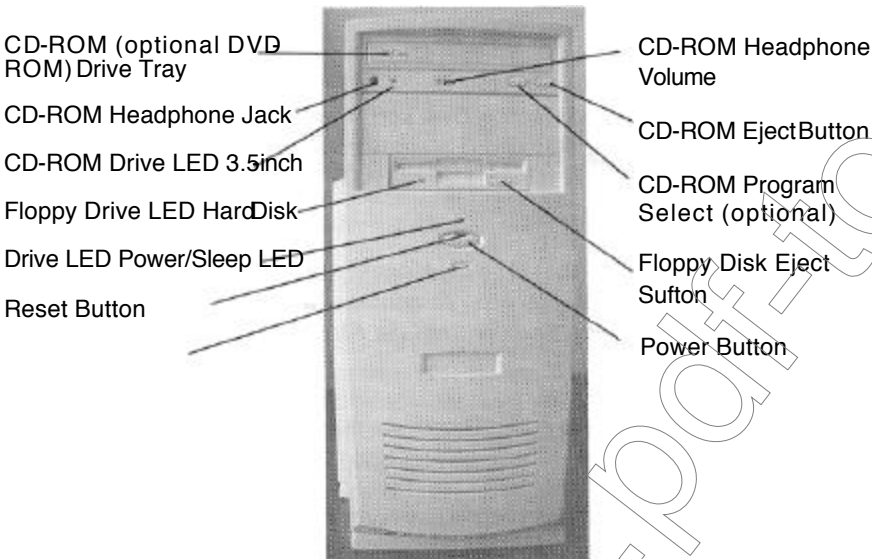
Turn On Your AST System

Now that you've connected all your equipment, press the Power/Sleep button on the computer's front panel (shown below). Remember to turn on the power switches for other optional components, such as your monitor and printer.

If the system doesn't operate, if you've connected system components, check the connections (as discussed in the previous section). For additional assistance, see the Troubleshooting section of this user's guide.

Front Panel Controls

Many AST computers include the following controls on the front panel. (Your system's front panel may appear slightly different, depending on the product you purchased.)



- **CD-ROM (or optional DVD-ROM) Eject Button**
Press this button to eject or close the CD-ROM (or optional DVD-ROM) Drive Tray. To load a CD-ROM or audio compact disc, place the disc flat in the tray with the labeled side up.
- **CD-ROM Program Select(optional)**
Press this button to change programs (selections) when playing an audio CD.
- **CD-ROM Headphone Jack & Volume Control**
You can connect a pair of mini-headphones to the CD-ROM Headphone Jack to listen to audio CDs without disturbing others. To adjust the headphone volume, rotate the volume control to the desired volume level.
- **CD-ROM Drive LED**
The LED should be illuminated when the system is busy reading your CD-ROM or audio CD disc. Avoid ejecting a CD-ROM disc until the LED is OFF.
- **CD-ROM Drive Tray**
The drive tray holds your CD-ROM or audio compact disc (insert the disc with the labeled side up).
- **3.5-inch Floppy Disk Eject Button**
When you insert a 3.5-inch Floppy Disk into your floppy drive (labeled side UP), the eject button should pop out, alerting you that the disk is in the drive. To eject the disc, make sure the drive's LED is OFF, then push the eject button.
- **3.5-inch Floppy Drive LED**
The Floppy Drive's LED should be illuminated while the system is busy reading data from your 3.5-inch floppy disk. To minimize the risk of lost data, don't eject the floppy disk from the drive until the Floppy Drive LED is OFF.
- **Power Button**
Press this button to turn the system power on or off. (See page 18 for details.)
- **Power/Sleep LED**
The LED color indicates the system's power mode. (Green = Power On; Amber = Sleep Mode).

- **Hard Disk Drive LED**
The Hard Disk Drive's LED should be illuminated when the system is busy reading data from your factory-installed hard disk. To minimize the risk of lost data, don't turn your computer power off (or reset the system) until the Hard Disk Drive LED is OFF.
- **Reset Button**
Press the Reset button if you ever need to reboot your computer because the system won't respond. To minimize the risk of lost data, don't press the Reset button until the Hard Disk Drive LED and Floppy Drive LED are OFF.

Troubleshooting

If you experience problems using your AST Personal Computer after setting it up, review the following checklist for possible solutions:



- No function, no power, no lights
Turn off the computer's power switch. Check and reconnect cables, if necessary. Make sure your surge protector (and AC wall socket) power switches are turned on.
- No picture - Power light is on, but no display appears
Make sure the monitor's signal cable is securely connected to the ~~VGA~~ port on the system's rear panel. The monitor's power cord must also be connected to the monitor and surge protector or grounded AC outlet.
- The screen goes blank after a short while
The computer's power saving feature may be enabled. Press any key on the keyboard or move the mouse to restore the picture.
- The screen displays moving patterns after a few minutes
Your computer's screen saver feature is enabled. Press any key on the keyboard or move the mouse to restore the picture.
- No response when typing on the keyboard or moving the mouse
Check the keyboard and mouse connections to see whether the cables are plugged into their respective ports securely. **Caution:** Always shut down your system before reconnecting cables, to avoid damaging your equipment.
- No sound output from speaker
Make sure the power cord and speaker cables are securely connected. The speaker must be connected to the system's Out audio connector.
- No sound when using a microphone
Make sure your microphone's connector is plugged into the In audio connector on the system's rear panel.

If Your Product Needs Service

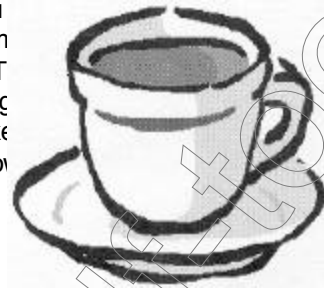
Do not attempt to service this product yourself. If you feel that the product is not in proper work order, unplug the unit and seek assistance from qualified service personnel, especially under the following conditions:



- If the power cord or plug is damaged or frayed
- If liquid has been spilled on or into the product, or if the product has been exposed to rain or water
- If the product has been dropped or the cabinet has been damaged
- If the product exhibits a distinct deterioration in performance, indicating a need for service

Take A Break (Using the Sleep Feature)

Your AST Computer's Sleep feature allows you to place the system in a low power consumption mode during periods of reduced system activity. This feature is useful, for example, when you're working on an important task, but you just want to take a break for a few minutes without having to shut down your system power. Here's how to use it:



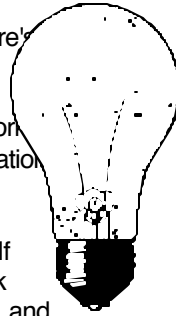
1. To minimize the risk of lost data, save your work and back up any files you may have been working in before you use the Sleep feature.
2. Click on the Start button in the Windows 98 Task Bar. Then click on the Suspend... pop-up menu option. The Power/Sleep LED should change color from Green to Amber, indicating that the system has switched to Sleep Mode.
3. To awaken the system, press any key on your keyboard or move your mouse. The Power/Sleep LED should change color from Amber to Green. Normal system activity should resume momentarily, and you can continue working.

Shutting Down Your System (Power Off)

For best results, always shut down your system (turn off your system power) with the Windows 98 Shut Down menu. Here's how to do it:

1. Save your work and close any files you may have been working in, then close and exit from any open software application programs.
2. Click the Start button on the Windows 98 Task Bar. If necessary, click on Shut Down in the popup menu, then click "OK." The system should shut down after a few moments, and the Power/Sleep LED will turn off.

Note: If you ever need to shut down the system and are other than through the Windows 98 Shut Down menu, press and hold the Power button on the system's front panel for more than a second to shut down your computer's power.



2 System Features

Motherboard

Your computer's motherboard (main circuit board) is based on the Micro ATX form factor, and features advanced multimedia functionality. It incorporates the Intel 82440ZX chipset, consisting of the Intel 82443ZX PCU/AGP Controller (PAC) and the Intel 82371EB PCI ISA IDE Xcelerator (PIIX4E). Additional features include two IDE interfaces with Ultra DMA support, ACPI power management and PCI 64V digital audio support.

Processor

- Processor connector accepts Intel® Celeron® Single Edge Processor package or Intel® Pentium® 11/111 Single Edge Contact cartridge (with retention mechanism)
- Supports Intel® Celeron® processor with 66MHz host bus speed
- Supports Intel® Pentium® II processor with 66MHz or 100MHz host bus speed
- Supports Intel® Pentium® III processor with 100 MHz host bus speed

Chipset

Intel 82440ZX Chipset, including Intel 82443ZX PCI/AGP Controller (PAC) and Intel 82371EB PCI ISA IDE Xcelerator (PIIX4E)

System Memory

- Two 168pin DIMM sockets can accommodate one or two single or double sided 64bit or 72bit memory modules (3.3V only)
- Supports 8MB to 512MB (max.) of 66MHz (SPD optional) or 100MHz SPD unbuffered Synchronous DRAM (8, 16, 32, 64, 128 & 256MB modules)
- Supports Error Checking & Correcting (ECC) or -ECC memory

Graphics Support

- NVIDIA RIVA TNT Enhanced 128Bit 3D Processor
- 8MB SDRAM Video Memory
- Optional VIP Video Connector (depending on the product you purchased)

Peripheral Interfaces

- Parallel Port
- Serial Port A
- PS/2 Mouse Connector, PS/2 Keyboard connector
- USB Port 0/USB Port I
- VGA Port
- MIDI/Game Port
- Audio Line Out/Audio Line In/Mic In connectors
- (1) Floppy connector
- (2) IDE interfaces (up to 4 IDE Devices) with UltraDMA support for Hard Disk Drives and CDROM Drives.

I/O Control

- SMSC FDC37M807 Super 1/0 Controller

BIOS

- IntelAMI BIOS
- Intel E28FO04B5 4Mbit boot block flash memory
- Supports SMBIOS, Advanced Power Management (APM), Advanced Configuration and Power Management Interface (ACPI), and Plug and Play

Sound System

- AC '97 Crystal CS4297 audio codec
- Sound Blaster AudioPCI 64V digital audio controller
- (3) Audio Jacks (Line Out, Line In, Mic In)

Additional features

- Speaker
- Wake On Ring
- WakeOn-LAN technology(optional, depending on the product you purchased)

Expansion Slots

- (3) PCI expansion slots and (1) ISA slot

Mechanical

- Micro ATX Form Factor

3 BIOS Setup

Your AST Personal Computer's BIOS (Basic Input Output System) helps regulate system operations by providing support for the system's central processing, memory and I/O (input/output) subsystems. The BIOS' Setup Program can be used to modify the computer's system configuration settings. These settings are stored in a dedicated battery-backed memory (CMOS RAM), which retains the information when computer power is turned off. When you boot up the system, the BIOS checks and configures the system during the Power Self Test (POST).



NOTE Your AST Personal Computer has been factory configured for optimum system performance. For best results, don't make changes to the Setup program's factory default settings, since an incorrect setting could affect your system's performance. If you must change settings, be sure to note the original factory default settings before doing so.

How to Enter the BIOS Setup Program

1. Turn on the computer's power switch. The Power On Self Test (POST) will run automatically.
2. Before your computer's operating system loads, the following text message should appear on your monitor:

Press <F2> if you want to enter SETUP

NOTE If the BIOS detects a conflict in your BIOS system configuration settings (for example, if the System Time and Date information has been lost), the following message may appear instead:

Press <F1> to continue, <F2> enter SETUP

In either case, press the <F2> key on your keyboard while the message appears onscreen. (If it disappears before you respond, you can reboot the system by pressing the Reset Button on the computer's front panel,

or by simultaneously pressing the <Ctrl> + <Alt> + keys on your keyboard.)

Setup Keys

The following keys help you navigate in Setup:

< >, <↑ >	Moves the cursor up or down to the previous or next item
<← >, <Ⓡ >	Selects a different menu screen
<Esc>	Exits the Menu
<Enter>	Executes the command or selects the submenu
<F9>	Loads default configuration values for the current menu
<F10>	Saves the current CMOS values, exits Setup

in Case of Problems

If you encounter problems booting your computer after you've made any saved configuration changes with the Setup program, the CMOS settings can be overridden to reset your system to its original factory default configuration. For best results, contact a qualified computer repair technician for assistance.

Setup Menu Bar

When you enter the BIOS CMOS Setup Utility, you should see the Menu Bar at the top of the Setup screen. The menus available from the menu bar at the top of the Setup screen include:

Maintenance	Specifies the processor speed and clears the Setup passwords(This menu is only available in Configure mode- see Jumper Settings in Chapter 4.)
Main	Allocates resources for hardware configuration
Advanced	Specifies advanced features available through the chipset.
Security	Specifies passwords and security features.
Power	Specifies Dower management features.
Boot	Specifies boot options and power supply controls.
Exit	Saves or discards changes to the Setup program options.

Note Certain menu options and default settings that appear in your system's Setup program may vary from those discussed on the following pages, depending on the AST product you purchased.

Maintenance Menu

From the Maintenance Menu, the processor speed can be set for certain Intel processors (where applicable), and Setup passwords can be cleared. Setup only displays this menu in Configure mode (discussed in Chapter 4).

Maintenance Menu

Processor Speed (66 MHz Host Bus)	<ul style="list-style-type: none">• 233• 266• 300• 333• 366• 400• 433• 466• 500	Specifies the processor speed in megahertz. This setup screen will only show speeds up to and including the maximum speed of the Processor installed on the motherboard. With a host bus operating at 66 MHz, the board supports processors at the following speeds: 233, 266, 300, 333, 366, 400, 433, 466 and 500 MHz.
Processor Speed (100 MHz Host Bus)	<ul style="list-style-type: none">• 350• 400• 450• 500• 550• 600	With a host bus operating at 100 MHz, the board supports processors at the following speeds: 350, 400, 450, 500, 550 and 600 MHz.
Clear All Passwords	No options	Clears the user and supervisor passwords.

Main Menu

The Main Menu reports processor and memory information and is used for configuring the system date and time. Default values appear in bold.

Main Menu

Feature	Options	Description
BIOS Version	No options	Displays the version of the BIOS
Processor Type	No options	Displays processor type.
Processor Speed	No options	Displays processor speed.
Cache RAM	No options	Displays the size of secondlevel cache.
Total Memory	No options	Displays the total amount of RAM on the motherboard.
Bank 0 Bank 1	No options	Displays size and type of DIMM installed in each memory bank.
Language	<ul style="list-style-type: none">English (US)GermanFrenchItalianSpanish	Selects the default language used by the BIOS.
Cache Bus ECC	<ul style="list-style-type: none">DisabledEnabledN/A	Enables or disables ECC on the cache bus.
Memory Configuration	<ul style="list-style-type: none">non-ECCECC	Enables or disables ECC
System Time	Hour, minute, and second	Specifies the current time.
System Date	Month, day, year	Specifies the current date.

Advanced Menu

This menu is for setting advanced features that are available through the chipset.

Advanced Menu

Feature	Options	Description
Boot Settings Configuration	No options	Configures Plug and Play and the Numlock key, and resets configuration data. When selected, displays the Boot Settings Configuration submenu.
Peripheral Configuration	No options	Configures peripheral ports and devices. When selected, displays the Peripheral Configuration submenu.
IDE Configuration	No options	Specifies type of connected IDE device.
Diskette Configuration	No options	When selected, displays the Floppy Options submenu.
Event Log Configuration	No options	

Video Configuration	No options	Configures video features. When selected, displays the Video Configuration submenu.
Resource Configuration	No options.	Configures memory blocks and IRQs for legacy ISA devices. When selected, displays the Resource Configuration submenu.

Boot Setting Configuration Submenu

This submenu is used for setting Plug and Play and the Numlock key, and for resetting configuration data. Default values appear in bold.

Boot Setting Configuration Submenu

Feature	Options	Description
Plug & Play O/S	<ul style="list-style-type: none">• No• Yes	Specifies if a Plug and Play operating system is being used. No lets the BIOS configure all devices. Yes lets the operating system configure Plug and Play devices. Not required with a Plug and Play operating system.
Reset Config Data	<ul style="list-style-type: none">• No• Yes	Clears the BIOS configuration data on the next boot.
Numlock	<ul style="list-style-type: none">• Off• On	Specifies the power on state of the Numlock feature on the numeric keypad of the keyboard.

Peripheral Configuration Submenu

This submenu is used for configuring the computer peripherals. Default values appear in bold.

Peripheral Configuration Submenu

Feature	Options	Description
Serial Port A	<ul style="list-style-type: none">• Disabled• Enabled• Auto	Configures Serial Port A. Auto assigns the first free COM port, normally COM1, the address 3F8h, and the interrupt IRQ4. An * (asterisk) displayed next to an address indicates a conflict with another device.
Base I/O address	<ul style="list-style-type: none">• 3F8• 2F8• 3E8• 2E8	Specifies the base I/O address for Serial Port A, if Serial Port A is set to Enabled
Interrupt	<ul style="list-style-type: none">• IRQ 3• IRQ 4	Specifies the interrupt for Serial Port A, if Serial Port A is set to Enabled

Serial Port B	<ul style="list-style-type: none"> · Disabled · Enabled · Auto 	<p>Configures Serial Port B (internal header)</p> <p>Auto assigns the first free COM port, normally COM2, the address 2F8h and the interrupt IRQ3.</p> <p>An * (asterisk) displayed next to an address indicates a conflict with another device.</p> <p>If either serial port address is set, that address will not appear in the list of options for the other serial port.</p>
Mode	<ul style="list-style-type: none"> · Normal · IrDA SIR-A · ASK-IR 	<p>Specifies the mode for Serial Port B for normal (COM 2) or infrared applications.</p> <p>This option is not available if Serial Port B has been disabled.</p>
Base I/O address	<ul style="list-style-type: none"> · 3F8 · 2F8 · 3E8 · 2E8 	<p>Specifies the base I/O address for Serial Port B.</p>
Interrupt	<ul style="list-style-type: none"> · IRQ 3 · IRQ 4 	<p>Specifies the interrupt for Serial Port B.</p>

Peripheral Configuration Submenu(continued)

Feature	Options	Description
	<ul style="list-style-type: none"> • Disabled • Enabled • Auto 	Configures the Parallel port. Auto assigns LPT1 the address 378 and the interrupt IRQ7 An * (asterisk) displayed next to an address indicates a conflict with another device.
Mode	<ul style="list-style-type: none"> • Output Only • Bi-directional • EPP • ECP 	Selects the mode for the Parallel port. Not available if the Parallel port is disabled. Output Only operates in AT \pm -compatible mode. Bi-directional operates in PS/2 compatible mode. EPP is Extended Parallel Port mode, a high-speed bi directional mode. ECP is Enhanced Capabilities Port mode, a high-speed bi-directional mode.
Base I/O address	<ul style="list-style-type: none"> • 378 • 278 • 228 	Specifies the base I/O address for the Parallel port.
Interrupt	<ul style="list-style-type: none"> • IRQ 5 • IRQ 7 	Specifies the interrupt for the Parallel port.
Audio Device	<ul style="list-style-type: none"> • Disabled • Enabled 	Enables or disables the onboard audio subsystem.
Legacy USB Support	<ul style="list-style-type: none"> • Disabled • Enabled • Auto 	Enables or disables USB legacy support.

IDE Controller Submenu

This submenu allows you to specify the types of connected IDE Devices.
Default values appear in bold.

IDE Device Configuration

Feature	Options	Description
IDE Controller	<ul style="list-style-type: none">• Disabled• Primary• Secondary• Both	Specifies the integrated IDE controller. Primary enables only the Primary IDE Controller. Secondary enables only the Secondary IDE Controller. Both enables both IDE controllers.
Hard Disk Pre Delay	<ul style="list-style-type: none">• Disabled• 3 Seconds• 6 Seconds• 9 Seconds• 12 Seconds• 21 Seconds• 30 Seconds	Specifies the hard disk drive predelay.
Primary IDE Master	No options	Reports type of connected IDE device. When selected, displays the Primary IDE Master submenu.

Primary IDE Slave	No Options	Reports type of connected IDE device. When selected, displays the Primary IDE Slave submenu.
Secondary IDE Master	No Options	Reports type of connected IDE device. When selected, displays the Secondary IDE Master submenu.
Secondary IDE Slave	No Options	Reports type of connected IDE device. When selected, displays the Secondary IDE Slave submenu.

IDE Device Configuration Submenus

This submenu is for configuring connected IDE devices, such as the Primary IDE Master & Slave and Secondary IDE Master & Slave devices. Default values appear in bold.

IDE Device Configuration Submenus

Feature	Options	Description
Type	<ul style="list-style-type: none">· None· User· Auto· CD-ROM· ATAPI Removable· Other ATAPI· IDE Removable	<p>Specifies the IDE configuration mode for IDE devices.</p> <p>User allows the LBA Mode Control, Multi Sector Transfers, Transfer Mode, and Ultra DMA settings to be changed.</p> <p>Auto automatically fills in the values for the LBA Mode Control, Multi-Sector Transfers, Transfer Mode, and Ultra DMA settings.</p>
Maximum Capacity	No options	Reports the maximum capacity for the hard disk, if the type is User or Auto.

LBA Mode Control	<ul style="list-style-type: none"> • Disabled • Enabled 	Enables or disables the LBA mode control.
Multi-Sector Transfers	<ul style="list-style-type: none"> • Disabled • 2 Sectors • 4 Sectors • 8 Sectors • 16 Sectors 	Specifies number of sectors per block for transfers from the hard disk drive to memory. Check the hard disk drive's specifications for optimum setting.
Transfer Mode	<ul style="list-style-type: none"> • Standard • Fast PIO 1 • Fast PIO 2 • Fast PIO 3 • FPIO 3/DMA 1 • FPIO 4/DMA 2 • Fast PIO 4 	Specifies the method for moving data to/from the drive.
Ultra DMA	<ul style="list-style-type: none"> • Disabled • Mode 0 • Mode 1 • Mode 2 	Specifies the Ultra DMA mode for the drive.

Diskette Configuration Submenu

This submenu is used for configuring the diskette drive. Default values appear in bold.

Diskette Configuration Submenu

Feature	Options	Description
Diskette Controller	<ul style="list-style-type: none">• Disabled• Enabled	Disables or enables the integrated diskette controller.
Diskette A:	<ul style="list-style-type: none">• Not installed• 360 KB, 5.25"• 1.2 MB, 5.25"• 720 KB, 3.5"• 1.44/1.25 MB, 3.5"• 2.88 MB, 3.5"	Specifies the capacity and physical size of diskette drive A.
Diskette Write Protect	<ul style="list-style-type: none">• Disabled• Enabled	Disables or enables write protect for the diskette drive.

Event Log Configuration Submenu

This submenu is used for configuring the Event Logging features. Default values appear in bold.

Event Log Configuration Submenu

Feature	Options	Description
Event Log	No options	Indicates if there is space available in the event log.
Event log validity	No options	Indicates if the contents of the event log are valid.
View event log	[Enter]	Displays the event log.
Clear all event logs	<ul style="list-style-type: none">• No• Yes	Clears the event log after rebooting.
Event Logging	<ul style="list-style-type: none">• Disabled• Enabled	Enables logging of events.
ECC Event Logging	<ul style="list-style-type: none">• Disabled• Enabled	Enables logging of ECC events.
Mark events as read	[Enter]	Marks all events as read.

Video Configuration Submenu

This submenu is used for configuring video features. Default values appear in bold.

Video Configuration Submenu

Feature	Options	Description
Palette Snooping	<ul style="list-style-type: none">DisabledEnabled	Controls the ability of a primary PC graphics controller to share a common palette with an ISA addin video card.
AGP Aperture Size	<ul style="list-style-type: none">64 MB256 MB	Specifies the aperture size for the AGP video controller.

Resource Configuration Submenu

This submenu is used to configure memory and interrupts. Options are designated as either Available (default) or Reserved.

Resource Configuration Submenu

Feature	Options		Description
Memory Reservation	• C8000– CBFFF	Available	Reserves specific upper memory blocks for use by legacy ISA devices.
	• CC000– CFFFF	Available	
	• D0000– D3FFF	Available	
	• D4000– D7FFF	Available	
	• D8000– DBFFF	Available	
	• DC000- DFFFF	Available	
IRQ Reservation	• IRQ3	Available	Reserves specific IRQs for use by Legacy ISA devices. An * (asterisk) displayed next to an IRO indicates an IRO conflict.
	• IRQ4	Available	
	• IRQ5	Available	
	• IRQ7	Available	
	• IRQ10	Available	
	• IRQ1 1	Available	

Security Menu

This menu is used to set the Password and Security features. Default values appear in bold.

Security Menu

Feature	Options	Description
User Password is	No options	Reports if there is a user password set.
Supervisor Password Is	No options	Reports if there is a supervisor password set.
Set User Password	Password can be up to seven alphanumeric characters.	Specifies the user password.
Set Supervisor Password	Password can be up to seven alphanumeric characters.	Specifies the supervisor password.
Clear User Password	<ul style="list-style-type: none">· No· Yes	Clears the user Password.
User Access Level	<ul style="list-style-type: none">· Limited· No Access· View Only· Full	Controls user access to Setup. No Access prevents the user from accessing Setup.

Unattended Start	<ul style="list-style-type: none">• Disabled• Enabled	Enables the Unattended Start feature. When enabled, the computer boots, but the keyboard is locked. The user must enter a password to unlock the keyboard or boot from a diskette.
------------------	--	--

Power Menu

This menu is used to set the Power Management features. Default values appear in bold.

Power Menu

Feature	Options	Description
Power Management	<ul style="list-style-type: none">• Disabled• Enabled	Enables or disables the BIOS power management feature.
Inactivity Timer	<ul style="list-style-type: none">• Off• 1 Minute• 5 Minutes• 10 Minutes• 20 Minutes• 30 Minutes• 60 Minutes• 120 Minutes	Specifies the amount of time before the computer enters standby mode.
Hard Drive	<ul style="list-style-type: none">• Disabled• Enabled	Enables power management for hard disks during standby and suspend modes.
Video Power Down	<ul style="list-style-type: none">• Disabled• Standby• Suspend• Sleep	Specifies power management for video during standby and suspend modes.

Boot Menu

This menu is used to set the Boot features and Boot Sequence. Default values appear in bold.

Boot Menu

Feature	Options	Description
Quiet Boot	<ul style="list-style-type: none">• Disabled• Enabled	<p>Disableddisplays normal POST messages.</p> <p>Enableddisplays OEM logo instead of POST messages.</p>
Quick Boot	<ul style="list-style-type: none">• Disabled• Enabled	Enables the computer to boot without running certainPOST tests.
Scan User Flash Area	<ul style="list-style-type: none">• Disabled• Enabled	Enables the BIOS to scan the flash memory for user binary files that are executed at boot time.
After Power Failure	<ul style="list-style-type: none">• Stays Off• Last State• Power On	<p>Specifies the mode of operation if an AC/Power loss occurs.</p> <p>Power Onrestores power to the computer.</p> <p>StayOff keeps the power off until the power button is Dressed.</p> <p>Last Statestores the previous power state before power loss occurred.</p>

On Modem Ring	<ul style="list-style-type: none"> • Stay Off • Power On 	Specifies how the computer responds to an incoming call on an installed modem when the power is off.
On LAN	<ul style="list-style-type: none"> • Stay Off • Power On 	Specifies how the computer responds to a LAN wakeup event when the power is off.
On PME	<ul style="list-style-type: none"> • Stay Off • Power On 	Specifies how the computer responds to a PME wakeup event when the power is off.

First Boot Device	<ul style="list-style-type: none"> • Disabled 	<p>Specifies the boot sequence from the available devices. To specify boot sequence, select the boot device with <↑> or <↓> and press <Enter>.</p> <p>The operating system assigns a drive letter to each boot device in the order listed. Changing the order of the devices changes the drive lettering.</p> <p>Not all of the devices in this list are available as second, third, and fourth boot devices.</p> <p>For a typical system including a diskette drive, a hard disk drive, and a CD-ROM, the default boot devices are:</p> <p>First Boot Device: Floppy Second Boot Device: 1st IDE HDD Third Boot Device: ATAPI CD-ROM Fourth Boot Device: Disabled</p>
Second Boot Device	<ul style="list-style-type: none"> • 1st IDE-HDD 	
Third Boot Device	<ul style="list-style-type: none"> • 2nd IDE-HDD 	
Fourth Boot Device	<ul style="list-style-type: none"> • 3rd IDE-HDD • 4th IDE-HDD • Floppy • ARMD-FDD • ARMD-HDD • ATAPI CDROM • SCSI • NETWORK 	

Exit Menu

This menu allows you to exit the Setup Program, save changes, and load and save default settings.

Exit Menu

Feature	Description
Exit Saving Changes	Exits and saves changes in CMOS SRAM.
Exit Discarding Changes	Exits without saving changes made in Setup.
Load Setup Defaults Load Custom Defaults	Loads factory default values for all the Setup options. Loads custom defaults for Setup options.
Save Custom Defaults	Saves current values as custom defaults. Normally, the BIOS reads Setup values from flash memory. If this memory is corrupted, the BIOS reads the custom defaults. If no custom defaults are set, the BIOS reads the factory defaults.
Discard Changes	Discards changes without exiting Setup. The option values present when the computer was turned on are used.

4 Components and Upgrades

This chapter discusses your system's components, and how to install optional devices or upgrade components to improve your system's performance.

WARNING Your system's components are sensitive, and must be handled carefully! To avoid risk of personal injury or accidental damage to your equipment, contact a qualified computer technician for assistance installing devices or upgrading system components.

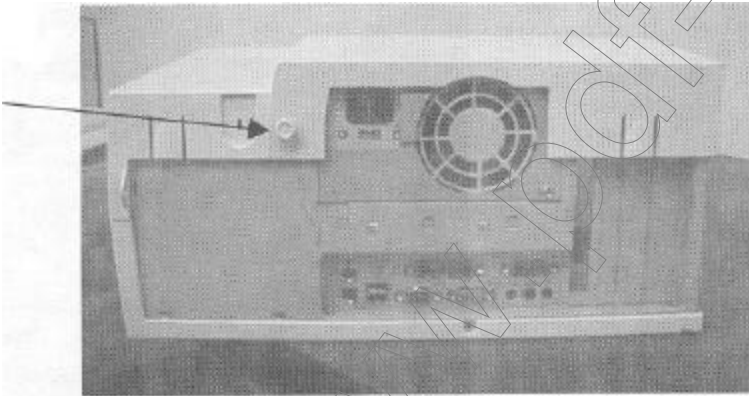
Open the System Case

First, make sure the computer's power is turned OFF. Then disconnect your system's keyboard, mouse, monitor, power cord, and optional items (for example, speakers, microphone, telephone extension cord) from the computer's rear panel.

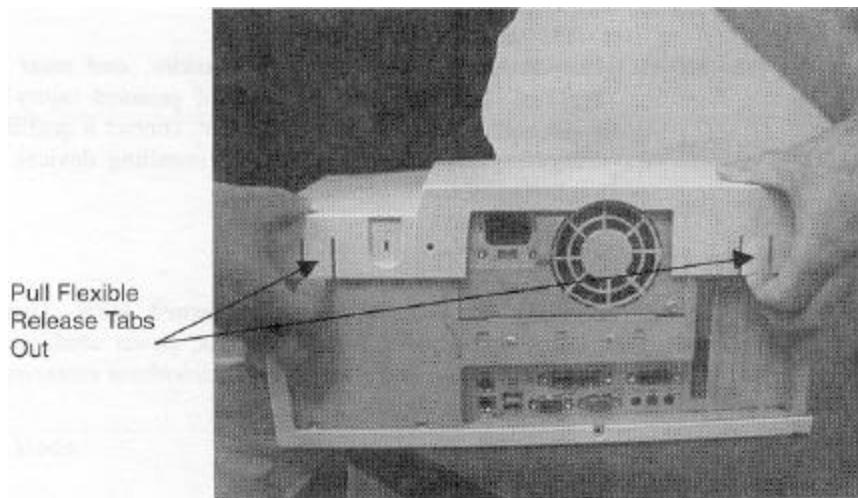
Remove the Right Side Cover

1. Lay the computer on its Left Side Cover.
2. Unscrew the anchor screw from the rear of the Right Side Cover. Set it aside.

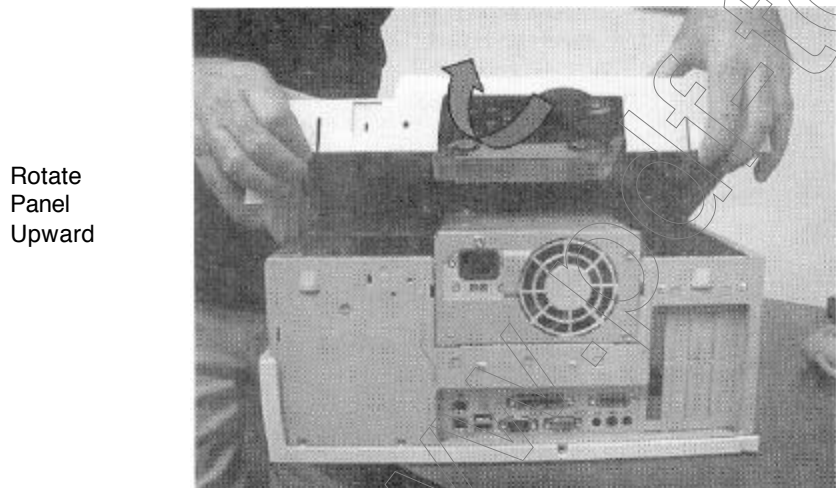
Remove
Anchor
Screw



3. Grasp the Right Side Panel's twin flexible release tabs.
4. Pull the tabs gently, just slightly away from the rear panel until you can lift the Right Side Panel away. Be careful of sharp edges under the tabs!

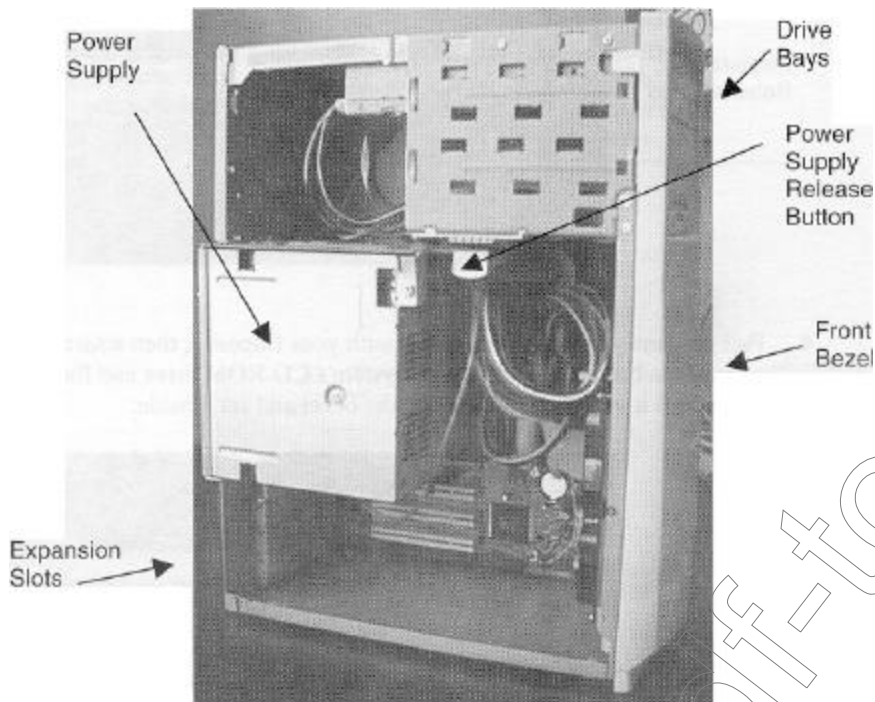


5. Rotate the panel upward, until its inner hooks release from their corresponding slots in the front of the chassis. Set the panel aside.



Side View of Open Computer Case

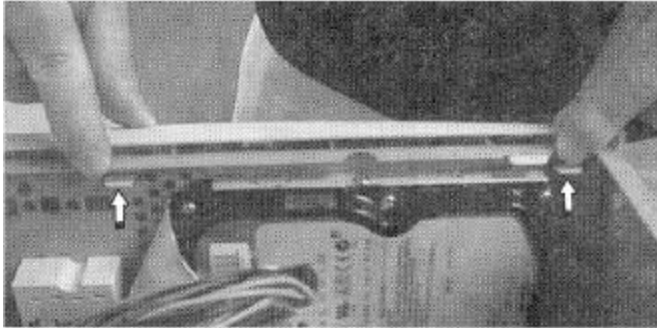
Here's a look at your computer's interior with the right side cover removed. Various system components are labeled below for easy identification. (Your system's components may appear slightly different than shown, depending on the product you purchased.)



Remove the Front Bezel

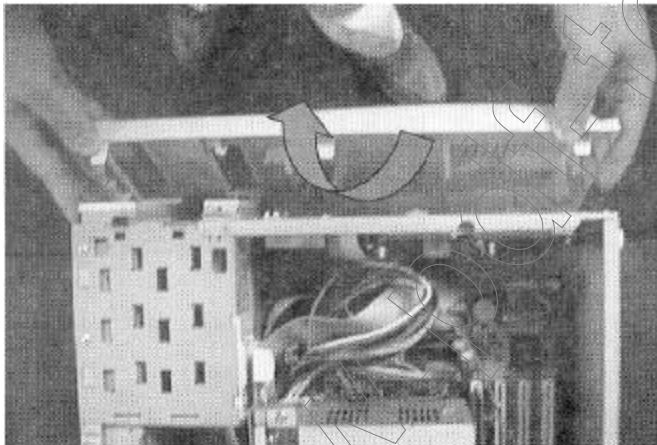
1. If you haven't already done so, remove the Right Side Cover (see the previous section).
2. Lay the system on its Left Side Panel with the front bezel hanging just over the edge of your desk or tabletop.
3. Look for three flexible release tabs along the bezel's inner edge (as shown in both figures below).

Flexible
Release Tabs



4. Pull up gently on each release tab with your fingertip, then rotate the edge of the bezel away from your system's ROM drive and floppy drive until it swings free. Remove the bezel and set it aside.

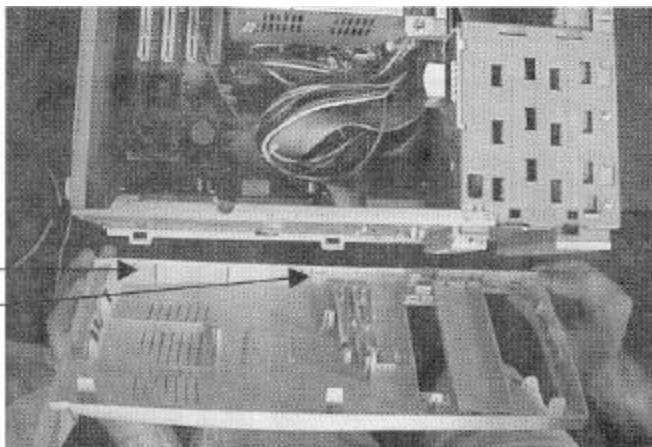
Pull Tabs Up,
Rotate Bezel
Away



Replace the Front Bezel

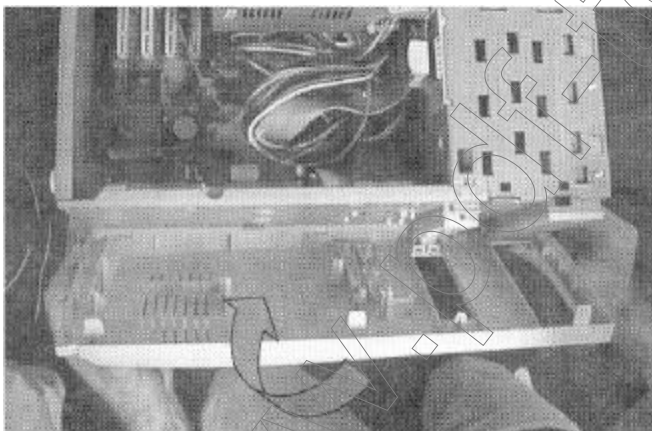
1. Carefully align the slots inside the bezel's lower edge with the hooks on the lower front edge of the computer case.

Align Slots
with Hooks



2. Rotate the bezel's upper edge forward, and guide it around your system's CD-ROM drive and floppy (or other accessible) drive. Don't force it.

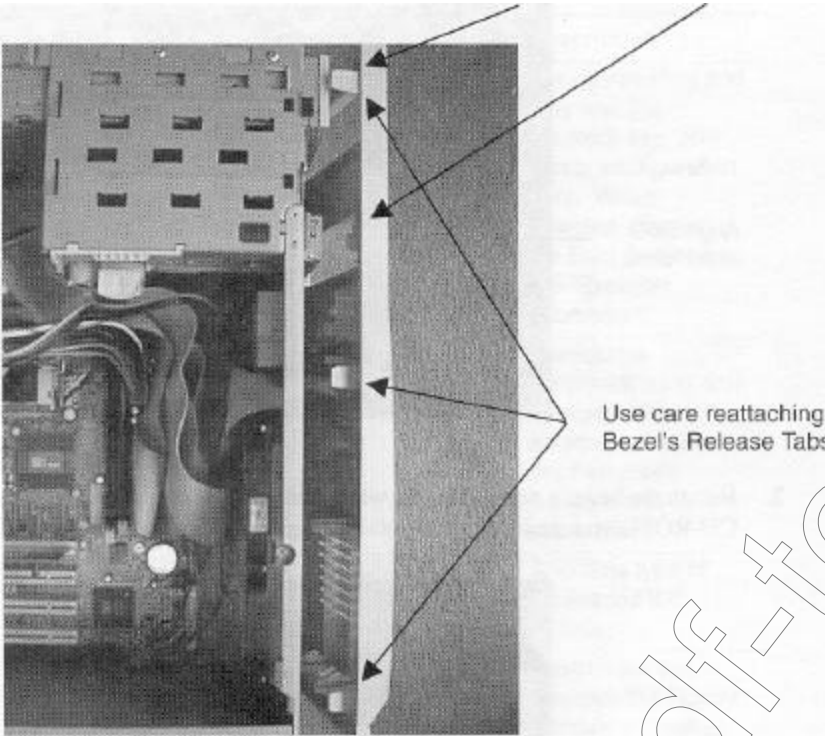
Rotate
Bezel
Forward



3. Press gently against the bezel's outer edges until it sits flush against the case. Use care when reattaching the bezel's release tabs.

System Case (Open Side View
with Bezel Detached)

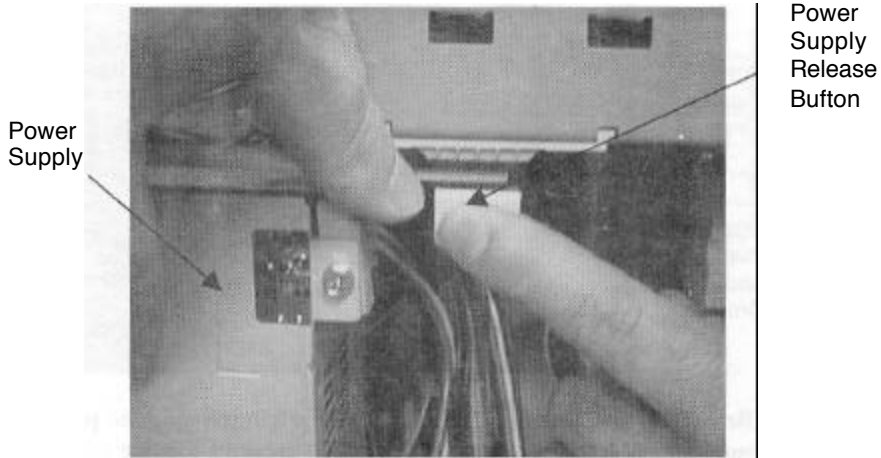
Guide Bezel around your
CD-ROM & Floppy Drives



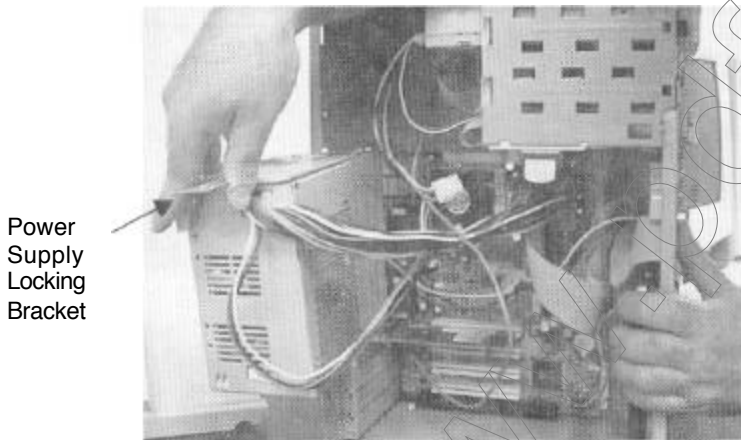
Accessing Your System's Motherboard

To perform certain system upgrades (such as adding additional Memory to your system), you may need temporarily move the power supply. Here's how to do it:

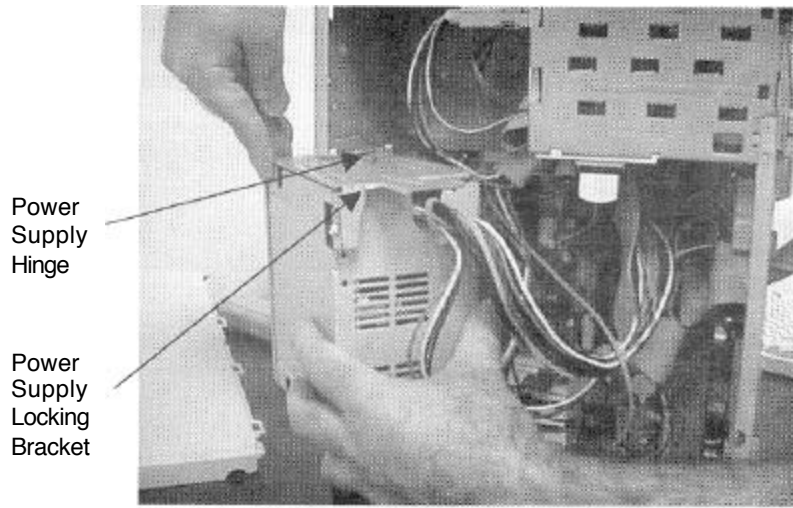
1. Press the Power Supply Release Button, located right of the power supply.



2. Swing the Power Supply out toward your ~~left~~ side care when working around cables and wiring!



3. To restore the power supply after you've upgraded a component the power supply's rear hinge into the computer case so that the power supply will swing closed properly.

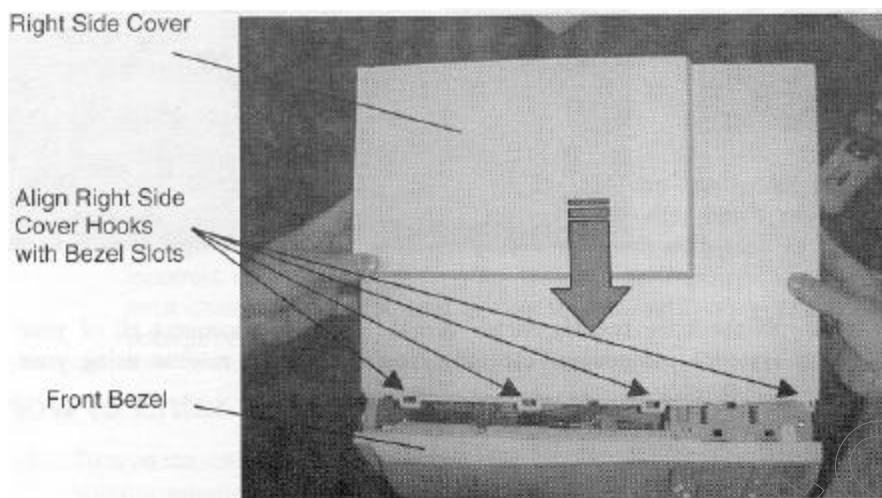


4. Be careful not to crimp any cables or wiring. Swing the power supply back into the computer case, then press its locking bracket into the slot above the Power Supply Release Button until it locks in place.

How to Restore the System Case

Lay your computer on its Left Side Panel (with the open side face up toward the ceiling). To avoid accidentally damaging your equipment, make sure that all internal wires and cables are tucked inside the case before you reattach the covers!

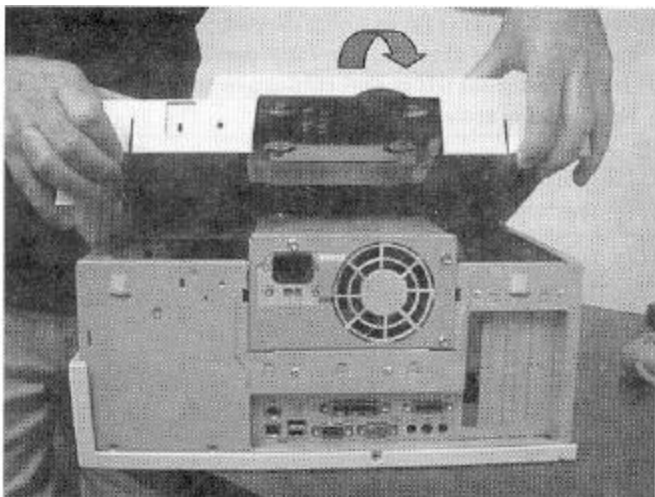
1. Align the hooks on the Right Side Cover's lower edge with the corresponding slots inside the Front Bezel's upper edge.



2. Carefully insert the hooks into the slots.

3. Slide the cover down until it stops. Make sure the flexible tabs lock in place on the rear panel, and the cover's edges fit properly.

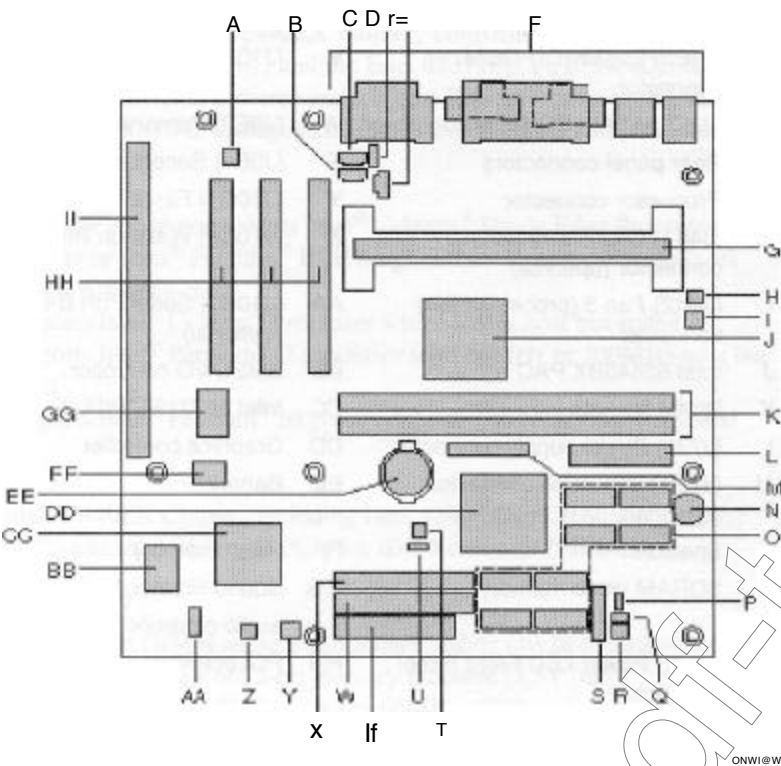
Slide Cover
into place



4. Reinstall the cover's anchor screw. After you reconnect all of system's components carefully, you're ready to resume using your computer.

Motherboard (Main Circuit Board) Layout

Your computer's motherboard ~~sho~~ appear similar to the following illustration.
(Your motherboard may vary slightly, depending on the product you purchased)



Motherboard Connectors & Jumpers

A CS4297 audio codec	S (J9H2) Front panel connector
B (J2D2) Auxiliary line in connector	T (J8E1) SCSI LED connector (optional)
C (J2D1) Telephony connector	U (J8E2) Configuration jumper block
D (J1 E2) Legacy CERN connector	V (J1OE1) Diskette drive connector
E (J2E1) ATAPI CDROM connector	W (J9E2) Primary IDE connector
F Rear panel connectors	X (JgE1) Secondary IDE connector
G Processor connector	Y (JLOCI) Fan 2 (system) connector
H (J4K1) Chassis intrusion connector(optional)	Z (J1 OC2) Wake on Ring connector
I (J4K2) Fan 3 (processor fan)	AA (J1OB1) Serial Port B connector
J Intel 82443BX PAC	BB SMSC 1/0 controller
K DIM M sockets	CC Intel 82371 EB PIIX4E
L (J7J1) Power supply connector	DD Graphics controller
M (J7G1) VIP video connector (optional)	EE Battery
N Speaker	FF Flash memory
O SDRAM video memory	GG Sound Blaster Audio POI 64V audio controller
P (J9J2) Power LED Front Panel connector	HH PCI connectors
Q (J9J3) Wake on LAN connector (optional)	II ISA connector
R (J1 OJ1) Fan 1 (power supply) connector(optional)	

For information on your system's default jumper settings, see the Jumper Settings section in this chapter. The various device installation instructions provide details on jumper settings for the component you're adding (if necessary).

To change jumper settings on your system's motherboard, note following examples of OPEN (uncapped) and CLOSED (capped) jumpers:



Note: PIN 1 indicates the location of Pin on connectors and jumpers on the motherboard.

Jumper Settings

(J8E2) Setup Configuration (RESERVED)

(J8E2) is reserved. The factory default setting should be 1

Description	J8E2
Normal (<i>default</i>)	1-2
Recovery (<i>Reserved</i>)	Open
Configure (<i>Reserved</i>)	2-3

Installing Devices

CPU Upgrade Processor

Your system supports the following processor types:

Processor Specifications

CPU Type	CPU Speed	Host Bus Frequency	L2 Cache Size	Package Type
Pentium II processor	233	66 MHz	512 KB	Single Edge Contact cartridge
	266	66 MHz	512 KB	
	300	66 MHz	512 KB	
	333	66 MHz	512 KB	
	350	100 MHz	512 KB	
	400	100 MHz	512 KB	
	450	100 MHz	512 KB	
Pentium III processor	450	100 MHz	512 KB	Single Edge Contact cartridge
	500	100 MHz	512 KB	
	550	100 MHz	512 KB	
	600	100 MHz	512 KB	
Celeron processor	266	66 MHz	None	Single Edge Processor Package
	300	66 MHz	None	
	300A	66 MHz	128 KB	
	333	66 MHz	128 KB	
	366	66 MHz	128 KB	
	400	66 MHz	128 KB	
	433	66 MHz	128 KB	
	466	66 MHz	128 KB	
	500	66 MHz	128 KB	

For processors with L2 cache, all supported onboard memory can be cached.

WARNING

Both the Single Edge Processor package and Single Edge Contact cartridge require proper use of a retention mechanism for correct processor installation and proper cooling. To avoid risk of damage to your equipment, do not attempt to install an upgrade processor yourself. It is strongly recommended that you contact an authorized Intel product retailer for assistance with upgrade processor availability and correct processor installation for the product you purchased.

System Memory (DRAM) Upgrade

Your system features two 148-pin DIMM sockets, which accommodate Dual Inline Memory Modules. You can configure the system memory size from 8MB to 512MB by using different combinations of DIMM modules. The BIOS automatically detects memory type, size, and speed. Memory can be installed in one or both sockets, and memory size can vary between sockets.

Installation Procedure

1. After opening the system case, locate the DIMM sockets on your motherboard (see the motherboard illustration on page 57).
2. If necessary, release an installed DIMM memory module by pushing both end latches down, then carefully rock the module forward and backward while slowly lifting it upward.
3. Align Pin 1 of the new DIMM module so that it matches Pin 1 of the DIMM socket.
4. Insert the DIMM module straight down into the DIMM socket. After inserting the DIMM module completely into the socket, you may need to press gently against the twin socket latches to secure the DIMM in place. (The latches are located on both ends of the socket.)

If Pin 1 on the DIMM module does not line up with Pin 1 on the socket, the DIMM module will not insert correctly into the socket. The module can be inserted into the socket only one way. To release the memory module, push both latches down and carefully rock the module forward and backward while slowly lifting it upward.

DIMM Module Combinations

WARNING Processors with 100 MHz host bus should be paired only with 100 MHz SDRAM. Processors with 66 MHz host bus can be paired with either 66 MHz or 100 MHz SDRAM.

The motherboard supports the following memory features:

- 168-pin DIMMs with gold-plated contacts
- 66 and 100 MHz (matching host bus speed) unbuffered SDRAM only
- Non-ECC (64bit) and ECC (72bit) memory, 3.3V memory only
- 100 MHz memory shall be Serial Presence Detect (SPD) memory; 66 MHz may be either SPD or non-SPD
- Single or double-sided DIMMs in the following sizes:

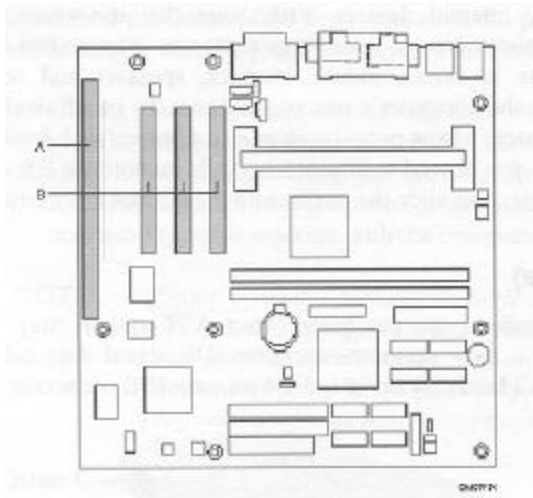
DIMM Size	Non-ECC Configuration	ECC Configuration
8 MB	1 Mbit x 64	1 Mbit x 72
16 MB	2 Mbit x 64	2 Mbit x 72
32 MB	4 Mbit x 64	4 Mbit x 72
64 MB	8 Mbit x 64	8 Mbit x 72
128 MB	16 Mbit x 64	16 Mbit x 72
256 MB	32 Mbit x 64	32 Mbit x 72

When ECC memory is installed, the BIOS supports both ECC and ECC mode. ECC mode is enabled in the Setup program. The BIOS automatically detects if ECC memory is installed and provides the Setup option for selecting ECC mode. If any non-ECC memory is installed, the Setup option for ECC mode does not appear and ECC operation is not available.

The following table describes the effect of using Setup to put each memory type in each supported mode:

	Memory Error Detection Mode in Setup Program	
	ECC Disabled	ECC Enabled
Non-ECC DIMM	No error detection	N/A
ECC DIMM	No error detection	Single-bit error correction, multiple-bit error detection

Expansion Slots



Your motherboard includes (4) expansion slots onboard, including:

- Three 32-bit PCI expansion slots (labeled B above);
- One ISA slot (labeled A above).

All PCI expansion slots accept PCI bus master cards and are fully supported by the PCI 2.1 specification.

Installing an Adapter Card

Before you begin, review the adapter card's installation instructions for special instructions. To install an adapter card:

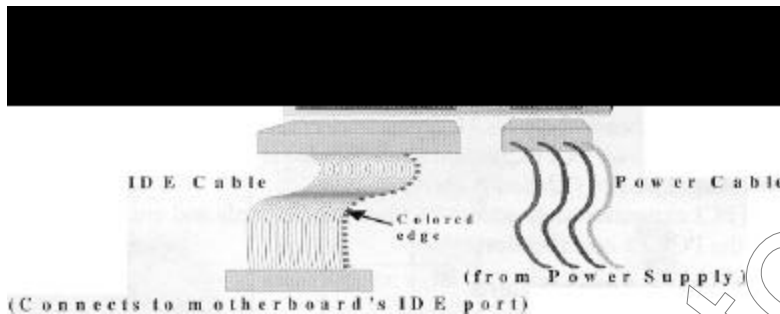
1. Remove the right side cover and front bezel from the computer (see the beginning of this chapter for details).
2. Choose an ISA(long) or PCI (short) expansion slot that can accommodate the card you're installing.
3. Locate the metal slot cover adjacent to the slot you'll be using. Remove the screw from the slot cover, then remove the slot cover from the case.
4. Handle the card by its edges, but don't touch the card's metal "fingers." Insert the card so that its metal "fingers" fit into the ISA or PCI slot, then carefully press downward on the card's outer edge so that it fits squarely into the slot.
5. Secure the card to the case with the slot cover's screw, then restore the side cover and front bezel. Save slot cover.

Installing Peripheral Devices

Before installing any internal devices, make sure that the system is unplugged and disconnected from your surge protector or grounded AC outlet. Disconnect the keyboard, mouse, monitor, speakers and other attached devices from the computer's rear panel. **Note:** To install devices accessible from the system's front panel (such as an additional disk drive or other storage device), you'll need to attach drive rails on both the left and right sides of the device, then slide the device into the desired drive bay.

HDD (Hard Disk Drive)

Depending on the product you purchased, your AST system may be equipped with either a two or three connector IDE signal data cable attached to the system's hard disk drive and the primary IDE connector on



the system board. Because each IDE connector on the motherboard can support two IDE devices, your system can accommodate up to 4 IDE devices. The figure above shows the cable connections for your system's primary hard disk drive. For connection instructions to "daisy" a second hard disk drive, consult the documentation included with your hard disk drive.

NOTE If your IDE cable isn't keyed with a connector tab, make sure that the cable's colored edge is aligned with Pin 1 on the drive connector and Pin 1 on the system board's IDE connector. (The A label indicates the location of Pin 1 on connectors and jumpers on the motherboard.)

www.ast.com

AST

UserGuide

BRAVO

Series